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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/039,309	11/07/2001	Eiji Sato	45672/56,682	2127

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EXAMINER	
MONDT, JOHANNES P	
ART UNIT	**PAPER NUMBER**
2826	

DATE MAILED: 01/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/039,309	SATO ET AL.	
	Examiner	Art Unit	
	Johannes P Mondt	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 4-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1 and 4-9* is/are allowed.

6)☒ Claim(s) *10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Amendment filed 11/09/2004 forms the basis of this office action. In said Amendment Applicant incorporated claim 3 into independent claim 1, cancelled claim 3 and added new claim 10. Claims 1 and 4-10 are pending, claim 2 having previously been cancelled in the Amendment filed 4/12/2004.

Comments on Remarks in said Amendment are included below under "Response to Arguments".

Response to Arguments

Applicant's arguments filed 11/09/2004 have been fully considered but they are not fully persuasive.

The argument made in traverse of the rejection of claim 1 in present form, i.e., the rejection of claim 3, is persuasive on the grounds that there is a substantial difference between homeotropic and focal conic states, such that a logical step is required to apply the teaching by Masazumi to the invention by Khan et al, Okada et al and Nakamura et al.

However, newly added claim 10 (a) introduces new matter because the sub-range $4 < d/P < 15$ has never been taught in the original specification, and (b) must be rejected over the prior art, because the range taught by the prior art and the range as claimed, although not overlapping, are infinitesimally close, the value 4 being a limit point of both the range taught by the prior art and the range as claimed. Applicant is reminded that a *prima facie* case of obviousness typically exists when the ranges of a

claimed composition overlap the ranges disclosed in the prior art *or when the ranges of a claimed composition do not overlap but are close enough such that one skilled in the art would have expected them to have the same properties*. In re Peterson, 65 USPQ2d 1379 (CA FC 2003). The latter is ensured because said ranges cannot possibly be closer without overlapping, while no explanation in the specification has been found why the point d/P = 4 is a critical point in the invention.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. ***Claim 10*** is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim contains subject matter not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. In particular, the claimed range for d/P, i.e., 4 < d/P < 15, constitutes new matter, being a substantial sub-range of the disclosed range 1 < d/P < 15. Nowhere in the Specification has the sub-range been disclosed to be more preferable than the disclosed range.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

> invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. ***Claim 10*** is rejected under 35 U.S.C. 103(a) as being unpatentable over Khan et al (6,377,321) in view of Okada et al (JP406102485A) and Nakamura et al (5,576,860). Khan et al teach a liquid crystal layer 22 (cf. col. 10, l. 42-47); a pair of substrates, e.g., 12 and 14 (cf. col. 10, l. 34-53), so as to interpose the liquid crystal layer there between, and a plurality of pixels arranged in matrix pattern (inherently so when the electrode configuration is in matrix pattern) (cf. col. 11, l. 5-19), wherein: the liquid crystal layer "has a helical structure" in the sense as disclosed by Applicant, i.e., has molecules with helical symmetry in it (cf. col. 9, l. 53 – col. 11, l. 3) (N.B.: inherently, cholesteric molecules have helical axes) and exhibits at least two stable states including a planar state and a focal conic state according to an applied voltage (cf. col. 15, l. 36-51).

Khan et al do not necessarily teach a thickness d in each of the plurality of pixels to have to different values and the liquid crystal layer to include at least two regions having different values of a first threshold voltage for transitioning from the planar to the focal conic state.

However, the provision of thickness gradients within the liquid crystal layer so as to achieve a first threshold voltage difference for two regions within said liquid crystal layer would have been obvious in view of *Okada et al*, who teach said thickness to have a gradient in the liquid crystal layer, and thus have at least two different values (in fact all values between d1 and d2), as a means to achieve a gradient in the threshold voltage (cf. English abstract, "Constitution" and Figures 7 and 8(a)), and hence at least two different values in said threshold voltage.

Motivation to include the teaching by Okada et al into the invention by Khan et al stems from the desirability to avoid display instability, as explained by Okada et al (cf. English abstract, "Purpose"), while unstable displays are generically disadvantageous in the art of liquid crystal displays. *Combination* of said teaching with said invention is straightforward: the liquid crystal display by Khan et al also relies on helical molecules, being of the chiral nematic liquid crystal variety (cf. abstract), while variation, in particular the inclusion of a thickness gradient is easily achieved over the spatial extent of a cell. *Success* in implementing the combination can therefore be reasonably expected.

Neither Khan et al nor Okada necessarily teach the further limitation "wherein the thickness d of the liquid crystal layer satisfies a relationship of 4<d/P<15 with a helical pitch P of the helical structure". However, it would have been obvious to include said further limitation in view of Nakamura et al, who, in a patent on a liquid crystal display based on a nematic liquid crystal with helical pitch (cf. col. 3, l. 3-23), hence closely related to the nematic liquid crystal device by Khan et al (cf. abstract and cols. 5 and 6), that the ratio of the liquid crystal layer (numeral 7 in Figure 5) thickness d divided by the helical pitch P, for the purpose of achieving high contrast and hence bright display, preferentially is to be in the range $1.5 < d/P < 4$ (cf. col. 3, l. 10-45). A *prima facie* case of obviousness typically exists when the ranges of a claimed composition overlap the ranges disclosed in the prior art *or when the ranges of a claimed composition do not overlap but are close enough such that one skilled in the art would have expected them to have the same properties*. In re Peterson, 65 USPQ2d 1379 (CA FC 2003). The

range taught by the prior art and the range as claimed *cannot possibly be closer* without overlapping: the value 4 is a limit point to both the range taught by the prior art and the range as claimed: the ranges thus are seen to come *infinitesimally close to overlap*. Applicants, in their disclosure, do not explain why d/P > 4 would in any way be critical to their invention: on the contrary, the range as disclosed is significantly broader than the one claimed currently (in fact the range as claimed currently has not been disclosed; see rejection under 35 USC 112, first paragraph).

Motivation to combine the teaching by Nakamura et al in this regard with the invention at least derives from the statement by Nakamura et al on the accomplishment of achieving a high contrast and thus a bright display (cf. col. 5, l. 1-3) which is a generic advantage for liquid crystal displays.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Johannes P Mondt whose telephone number is 571-272-1919. The examiner can normally be reached on 8:00 - 18:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J Flynn can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

NATHAN J. FLYNN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

JPM
January 16, 2005